A Review of Smartphone Fact-Checking Apps and their (Non) Use Among Older Adults

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ABSTRACT

Falsehoods continue to spread faster than facts in today's age of continuous, digital connections. Recent studies show older adults engage more frequently with misinformation than younger users. Given the reported uptake of mobile technologies among older adults (61% of US adults over 65 owned a smartphone in 2021), much of these engagements may occur via smartphones or tablets. What types of fact-checkers are currently available on smartphones? How do older adults fact-check information they encounter in their daily lives? In this paper, we explore these questions with a systematic app review and a semi-structured interview with older adults. Among the 8372 unique smartphone fact-checking apps identified, 45 apps were qualitatively and systematically reviewed. Five distinct user interface (UI) elements emerged: *news feed*, *article view*, *fact-checking widget*, *learning tool*, and *search view*. An interactive fact-checking option was found in 73% of the apps. None of our older interviewees reported using a smartphone fact-checking app but described other fact-checking behaviors, such as *asking* friends or acquaintances with domain expertise or *searching* on Google.

CCS CONCEPTS

• **Human-centered computing → Human computer interaction (HCI)**; **Empirical studies in HCI**.

KEYWORDS

Applications and Experiences; fact-checking; older adults; systematic review; user interface

ACM Reference Format:
Nina Sakhnini and Debaleena Chattopadhyay. 2022. A Review of Smartphone Fact-Checking Apps and their (Non) Use Among Older Adults. In *Adjunct Publication of the 24th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '22 Adjunct), September 28-October 1, 2022, Vancouver, BC, Canada.* ACM, New York, NY, USA, 8 pages. https://doi.org/10.1145/3528575.3551448

1 INTRODUCTION

Fake news can be defined in many different ways. These definitions often vary in the dimensions they consider and the ways they are operationalized [24]. One way to define fake news is to consider it as intentionally false news [27]. While false news has been around historically, what has made fake news more dangerous lately is how fast and how wide they reach people via social media technologies [17]. Social media platforms have started introducing ways to report suspected fake news—both automatically and via user reporting. Nevertheless, fake news continues to propagate around the world in a split second, particularly around any significant local, regional, national, or international event—e.g., the COVID-19 pandemic, US election results, or the ongoing Russian-Ukrainian conflict.

Continuous exposure to fake news has grave repercussions for society, the economy, and public health. For example, misinformation around the COVID-19 pandemic caused psychological distress at large and incited violent physical attacks on people with Asian origins [20]. Repeated exposure to fake news can bring on negative personality changes in individuals [4], and over time, threaten democratic institutions [16]. We are generally vulnerable to fake news because of our poor ability to detect deception [22]. However, some individuals may be more vulnerable than others due to certain factors, such as age, cultural background, socioeconomic status, education, or gender [19, 23]. For example, recent studies show that older adults are among the most vulnerable to the negative effects of fake news—not only due to cognitive and social changes but also a lack of digital skills [7, 26]. One study found that, on average, older adults shared about seven times as many fake news articles as their younger counterparts [12].

Given these vulnerabilities in older users, how are current fact-checking tools serving them? Broadly speaking, fact-checking is either done automatically (e.g., ClaimBuster: an end-to-end fact-checker [14]) or via human intervention (e.g., The Duke Reporters' lab [15]). Automated fact-checking tools use sophisticated algorithms and consider a range of parameters like a news source, rate of spread, semantics, and provenance [27]. Readers can fact-check information and share fact-checking results with others via websites or native mobile apps. Older adults are more likely to share such fact-checking results [2]. So understanding their fact-checking experience and designing with that information at hand is crucial.

Fact-checking tools come in a variety of shapes and sizes: dedicated websites (e.g., Snopes.com or FactCheck.org), browser plugins (e.g., Fake news debunker by InVID & WeVerify or Infoscope), informational tags on posts (e.g., YouTube or Twitter), website feature (e.g., Pinocchio at WashingtonPost.com or Truth-O-Meter at Politifact.com), and mobile apps (e.g., Logically or OIgetIt: Fake News Filter). Mobile phones are currently more prevalent among older adults than personal computers [10]. In 2021, 61% of adults over 65 owned a smartphone [18], and this global upward trend is expected to continue. Given that a number of mobile fact-checking apps exist,

MobileHCI '22 Adjunct, September 28-October 1, 2022, Vancouver, BC, Canada

ACM ISBN 978-1-4503-9341-6/22/09.
https://doi.org/10.1145/3528575.3551448

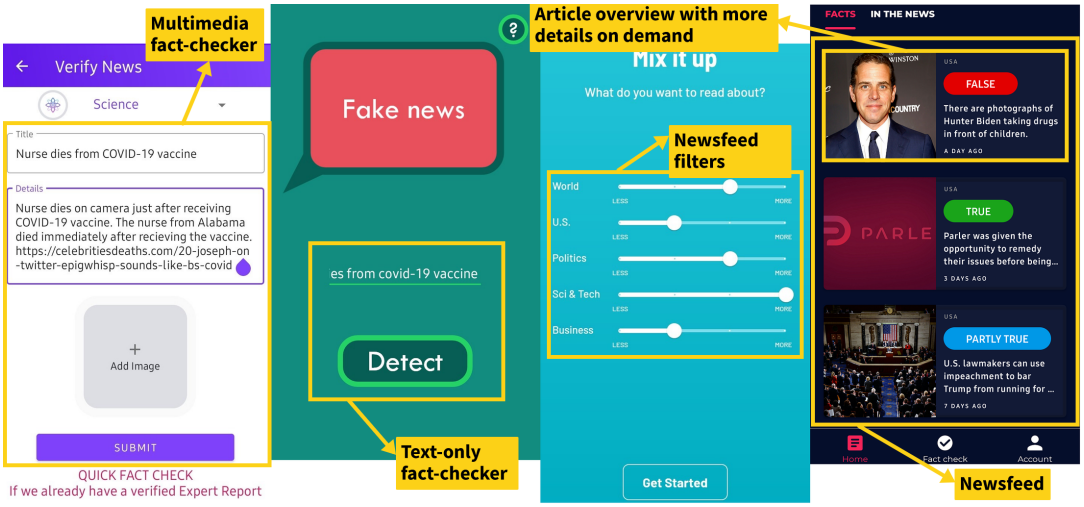

Figure 1: Example UI elements shown for four Android apps: (clockwise) Logically, NewsVoice, Fake News Detector, and NewsCop.

what are some of their common design features and how are they being used by older users?

In this work, we first review fact-checking mobile apps that are publicly available to everyday older adults. Based on the results of this review, we conducted a study with older adults to understand their use or non-use of fact-checking tools. Eleven older adults (aged 50+) were interviewed about their experiences and encounters with fake news and how they fact-checked information.

2 UNDERSTANDING FACT-CHECKING APPS

2.1 Method

We reviewed the available fact-checking apps to understand the current interfaces and identify the user-interface elements and interactions. We followed a systematic approach to reviewing fact-checking apps. First, we examined the most common app stores for searchability and bulk interactions. We included the app stores that had a scrapable web interface, these were the Apple App Store, Google Play Store, and Microsoft Store. Next, we identified a set of search keywords to retrieve fact-checking apps. The keywords are: "fact check", "false news", "fake news", "misinformation", "trust", "credibility", "deceptive news", "satire news", "disinformation", "cherry-picking", "clickbait", and "rumor". These keywords were chosen based on the comprehensive idiomatic exploration of fake news provided in the fake news survey by Zhou et. al. [27].

We conducted searches using the keywords and we filtered the apps based on the categories listed in the app store. After that, we filtered the apps based on the app's name, description, and screenshots posted on the app store. Next, we installed and tested the apps and filtered out the apps that were not fact-checking apps. We have left 45 apps; 27 Apps from the Apple App Store and 18 from the Google Play Store. A PRISMA of our systematic review approach can be found in appendix A and a list of the selected apps can be found in Appendix B. With the final set of apps, we scraped the apps' reviews and studied them. Simultaneously, we kept notes of our experience and extracted core interface elements.

2.2 Fact-Checking App Exploration

To explore each app, we followed a semi-structured exploration technique. For each app, we performed a set of tasks that range in complexity in addition to some free exploration. These tasks were: explore the newsfeed, sort articles in the news feed, filter the news feed, view an article, share an article, save an article, and use the fact-checker to check if a few pieces of news are fake. Figure 1 shows some of these tasks being performed on some of the apps.

We documented our experience with the app. We extracted the following list of UI elements that are general to fact-checking apps. In figure 2, we show the numbers of apps reviewed that had each of the UI elements

- *Newsfeed.* Shows an overview of news articles including the title, a summary or the first few lines of an article, an image, date, authors, and news sources that shared the same article. There is a fact-check status label as well as means of interacting with the article e.g. share. The Newsfeed view allows for filtering.
- *Article View.* Shows all of the details of the article in an inline view. The view highlights an analysis of why the article is fake or true. For fake articles, the view shows the true story. The article view might offer a button to listen to all of these details.
- *Fact-Checking Widget.* Allows for fact-checking using multi-modality to accommodate different technology skills, e.g., Typing or pasting text or URL, image or video, etc...
- *Learning tool.* Shows a widget that gives tips for fact-checking or a tutorial on fact-checking.
- *Search View.* Search by typing, or pasting text or URL, or uploading an image or a screenshot of a news article.

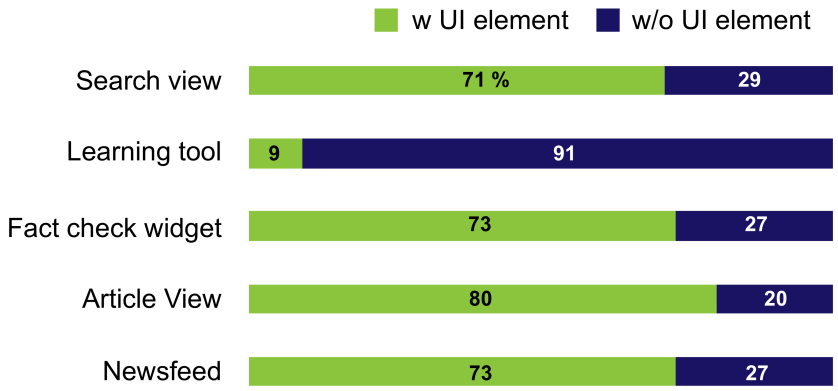

Figure 2: % of apps with or without the typical UI elements emerging in the app review. Newsfeed shows a timeline with summaries of news articles. Article View shows the news article in detail. The Fact-Checking Widget allows for fact-checking with multi-modal input such as a screenshot, text, or video. The learning tool is a form of training to improve the user's fact-checking skills. A search view to find an article or a fact-checked claim; search input might be multi-modal.

2.3 App Reviews Study

We scraped the reviews of each of the apps with a total of 5010 reviews. We studied all of the collected reviews and did not subset the reviews based on age. A majority (66%) of the reviews were with 5 stars. 15% of the reviews were with 4 or 3 stars. Bad reviews made 19% of the collected reviews. Sentiment analysis results conformed to the rating of each review. Topic modeling of the reviews resulted in three topics: reviews that discussed a UI matter, reviews that gave a user's impression of the app, e.g. like or hate the app, and reviews that discussed the content of the app such as what articles or news sites were included. Based on the UI element list we extracted from the app exploration study, we analyzed the app reviews focusing on the reviews under the UI topic.

After we analyzed these reviews we were left with the following insights:

- There were two opinions on showing the different sources that shared the news article:
  - Some users liked that feature and expressed that it helps them investigate further to find the truth.
  - Some users felt that the sources were biased towards a political point-of-view and found that offensive.
- Users had conflicting opinions about commenting on the news articles. Some users enjoyed the discussions in the comments. Other users were bothered by comments, especially in apps that had some offensive or uncontrolled discussions in the comments. The last group of users found the comments overwhelming and just ignored them.
- Users appreciated a simpler interface with bite-size information and easy access to the full news article.
- The favorite features for users were:
  - The ability to share an article, especially when it includes fact-checking results.
  - Multi-modal search (e.g. voice, URL, image).
  - The ability to personalize news feed like filtering news articles by geographical location.
- Many concerns about privacy, especially with apps that required permissions or asked for sign-up information.

3 OLDER ADULTS EXPERIENCE WITH FAKE NEWS AND FACT-CHECKING

We used the results of the previous work to inform a user study with older adults, 50 years old and above, to better understand how they fact-check and to better understand their technology choices when fact-checking.

3.1 Method

We conducted semi-structured interviews to uncover more specific details and experiences. Participants were recruited via social media posts and partnerships with local community organizations. Participants were invited to join the researchers for an online interview via a platform of the participant's choice. All of our participants chose Zoom as their preferred platform. Each participant used their understanding and definition of fake news. The study session lasted for about 40 to 50 minutes. The researchers asked questions about fake news exposure and fact-checking behaviors as conversation starters. The participants discussed if they typically fact-check the news they encounter online and on social media, why or why not, and how. At the end of the interview, the participants were asked to fill out an online questionnaire that included demographics, Attitudes and Beliefs survey [1]. We measured dogmatism since previous research found that dogmatism was positively correlated with belief in fake news [8]. Participants also filled the MDQP-16 [21] survey to measure their mobile device proficiency. The participants were thanked for their time and input. The study was approved by the university's institutional review board (IRB). Sessions were audio-recorded and iteratively analyzed for themes via memoing and group discussions.

3.2 Results

We interviewed 11 older adults residing in USA and Jordan. Their demographics are shown in table 1. We calculated the DOG scores as a sum of the answers to the set of statements on a 9-point Likert scale [8]. High DOG scores mean greater dogmatism and less flexibility in attitudes [1]. We considered scores above 75.6 (mean)

to be high. We calculated the mobile proficiency score as a sum of the means of scores of each proficiency area. High MDPQ-16 scores indicate higher mobile device use proficiency [21]. We considered scores above 30.3 (mean) to be high. All participants reported concerns about exposure to misinformation and some interest in fact-checking.

The authors open-coded the data to uncover themes. Initial themes included the role of interest in how they interacted with news, sharing, and fact-checking behaviors.

3.2.1 Fact-Checking. Overall, participants found it hard to fact-check. None of the participants used a fact-checking app. All of our participants used Google or a web search as their main fact-checking mechanism. One participant read news using a news app, while all of the others got their news from news websites, social media, newspapers, television, and radio. Participants were skeptical about the truthfulness of news articles they encounter online, however, US participants were less skeptical of images and figures they encounter online. Participants from Jordan assumed that the images and figures are by default fake, and they didn't pay much attention to them.

"I will go and search in Google and try and read it on multiple sites" –US7

"it [fact-checking] is a hard thing to do. I find it hard to verify videos, if I don't find it in Google or YouTube there is no way for me to know if it is right or wrong" –US8

Participants used Google search due to the simplicity of the search. Some participants were familiar with fact-checking websites such as Snopes. Also, participants indicated that they'd ask someone they know or trust to confirm a piece of news. Participants talked about going back to confirm with traditional newspapers or on TV. Some participants search for the story on news sites that they trust:

"I usually go to Snopes or I just Google [for fact-checking] [...] I'll go to the New York Times or the Tribune to see if I can see the story" –US4

Some participants expressed that they fall for fake news that is within their interests and that is more of a subconscious event, even though they are skeptical of what they read and absorb. One participant (J1) indicated that in his early days on social media, he used to believe everything he saw on the internet, but, with exposure, he learned to tell fake news and real news apart.

"I admit that in my early days on social media I was gullible and believed 100% of what was on social media, but, with time, I found out that, no, news coming through social media is almost bare of any correctness" –J1

We observed that participants with high DOG scores were more likely to consume news through social media. We also noticed that participants with high DOG scores mention that they trust themselves and trust their sources and would be less likely to question these sources and this news. We also observed that participants with low DOG scores used fact-checking sites and read research papers on the topic to fact-check.

3.2.2 Is it Interesting Enough? Participants talked about how they will not read or avoid a piece of news if it is not interesting to them. Interest was determined by the relevance of the news piece to the participant or their family or friends or whether it would be interesting to them driven by an altruistic motive to help others. Participants talked about some cues for how they find out whether they are interested in a news article at the first glance. For example, the interest declines if the language was less formal:

"If the language is very, um, geared toward younger people with a lot of slang I don't understand anymore, I kind of lose interest because I feel like I am not the audience and I don't care, which may or may not be inaccurate, I just don't want to bother" –US3

Participants also considered the truthfulness of a story to be a factor of interest:

"The minute I spot something that I know to be untrue, I am usually out of the story, or if I can scroll down to comments, I know that's wrong let's see what other people say" –US1

3.2.3 When to Share. Many participants did not share a news article that they know to be fake. However, some participants said they'd share such a thing as long as they commented on it to warn people that this is not true.

"If I share on Facebook; either I am totally convinced of the news or that I am adopting the ideology in this piece of news, or I share because I totally oppose the news and I write my opinion and thoughts on that" –US1

"not [sharing it] if I don't have something to say about it" –US4

Some participants talked about having shared fake news without knowing that it is fake, they said that once they learned that the news was not true they went and corrected it.

"If I forward something on WhatsApp that is not correct without knowing that and I learned later that it is fake news, I go back and tell everyone who got my message that this is not correct and this is why and this is the correct thing [...] I am not shy to admit if I shared something wrong" –J1

4 REFLECTION ON DESIGNING FACT-CHECKING APPS FOR OLDER ADULTS

The older population of 65 years and above is anticipated to comprise 20% of the U.S. population by the year 2030 [9]. Furthermore, the number of older adults using mobile technology in their everyday life is increasing. Thus, it is critical to understand how older users use mobile technologies to fact check and what tools are needed.

In 2021, 61% of adults over 65 owned a smartphone [18], and this global upward trend is expected to continue. Despite this increase in uptake and general excitement, studies report that older adults are not using mobile technology to its full potential [3, 6]. A popular approach to address this issue is designing senior-friendly applications with fewer functionalities, however, such simplifications can be actively stigmatizing toward older users and a barrier to intergenerational use and collaborative experiences. Thus, providing adequate solutions is crucial to improving the experiences of older adults as well as their digital well-being.

Older adults constitute a diverse group of mobile technology users [11], hence, designing for older adults should be sensitive to this spectrum of mental, physical, social, and technical abilities. For instance, one observation from our interview study found that older adults do not use fact-checking apps and prefer doing a Google search instead. When asked why they reported a Google search was

	J1	J2	US1	US2	US3	US4	US5	US6	US7	US8	US9
Age	60	84	73	56	76	77	53	67	79	50	87
Gender	M	F	F	M	F	F	F	M	M	M	M
DOG score	80	105	86	61	86	81	107	32	61	71	62
MDQP-16 score	30.5	23.5	27	35	27.5	27	31.5	32.5	32.5	34	33

Table 1: Participant Socio-demographics

deemed sufficient. However, web search engines cannot always be reliable in fact-checking. Studies have shown that pages retrieved by a simple web search do not always contain evidence needed to verify a given news claim [13]. This implication emphasizes the need to create more reliable means of fact-checking that older adults will want to use.

From our interviews with older adults, we learned the following:

We learned from our observations that older adults are more likely to fact-check using tools and sources that fall in all of the following categories:

(1) Older users are not using fact-checking apps on smartphones.
(2) Older users use tools that are already familiar to them, like Google search or Snopes, that they have come to trust from prior use.
(3) Older users prefer asking friends or acquaintances for fact-checking.
(4) Older users may not consider fact-checking if the information source generally conforms to their political point of view, or the political point of view of a person or group that they admire or socially belong to [25, 27].

Also, we learned from our work that older adults interacted with fake news and fact-checked claims majorly by sharing. They shared these in their circles or with someone they know would be interested in the topic, to prove a point in a discussion, or as a sole act of altruism to help others. The participants majorly shared privately instead of posting on their personal pages. Our participants rarely interacted through comments or likes. Their favorite sharing channels were posting to Facebook or sending the article at hand via email.

Throughout our app review study, we found some more general observations that might be useful when designing fact-checking apps for all users. First, most of the reviewed apps did not incorporate state-of-the-art fact-checking algorithms. Many apps relied on manual fact-checking or some basic algorithm. Apps with basic algorithms were given low ratings and users expressed dislike in the reviews. Another observation was regarding the overwhelming number of features in some of the interfaces. Finally, some of the apps did not have enough consideration for user privacy.

Fact-checking apps are tricky to design because the user has a tendency for early judgment of what they are reading. The user tends to develop a point-of-view as they are reading. After this opinion is developed, it is harder to change the user's point of view [27]. On the contrary, the effect of design choices on phenomena like mindless reading and the (non-) absorption of what the user is reading on their mobile devices [5] due to normative dissociation might affect the user's experience with fact-checking. Nevertheless, mindless scrolling was little explored for older adults.

5 CONCLUSION

Exposure to fake news and misinformation is detrimental on personal and societal levels, particularly for older adults. One way to combat fake news and misinformation is through fact-checking. However, fact-checking tools are not popular among older adults. In this work, we reviewed fact-checking apps and we interviewed older adults about their fact-checking behaviors. We discussed design insights for older adults' mobile fact-checking experiences. Our general implications are that fact-checking apps should be sensitive to age-related, personal, and political biases.

REFERENCES

[1] Robert A Altemeyer and Bob Altemeyer. 1996. *The authoritarian specter*. Harvard University Press.
[2] Michelle A Amazeen, Chris J Vargo, and Toby Hopp. 2019. Reinforcing attitudes in a gatewatching news era: Individual-level antecedents to sharing fact-checks on social media. *Communication Monographs* 86, 1 (2019), 112–132.
[3] GO Anderson. 2017. Technology use and attitudes among mid-life and older Americans. *AARP Research. tinyurl. com/yxwe4ow7. Retrieved April* (2017).
[4] Zach Bastick. 2021. Would you notice if fake news changed your behavior? An experiment on the unconscious effects of disinformation. *Computers in human behavior* 116 (2021), 106633.
[5] Amanda Baughan, Mingrui Ray Zhang, Raveena Rao, Kai Lukoff, Anastasia Schaadhardt, Lisa D Butler, and Alexis Hiniker. 2022. "I Don't Even Remember What I Read": How Design Influences Dissociation on Social Media. In *CHI Conference on Human Factors in Computing Systems*. 1–13.
[6] Anabela Berenguer, Jorge Goncalves, Simo Hosio, Denzil Ferreira, Theodoros Anagnostopoulos, and Vassilis Kostakos. 2016. Are Smartphones Ubiquitous?: An in-depth survey of smartphone adoption by seniors. *IEEE Consumer Electronics Magazine* 6, 1 (2016), 104–110.
[7] Nadia M Brashier and Daniel L Schacter. 2020. Aging in an era of fake news. *Current directions in psychological science* 29, 3 (2020), 316–323.
[8] Michael V Bronstein, Gordon Pennycook, Adam Bear, David G Rand, and Tyrone D Cannon. 2019. Belief in fake news is associated with delusionality, dogmatism, religious fundamentalism, and reduced analytic thinking. *Journal of applied research in memory and cognition* 8, 1 (2019), 108–117.
[9] US Census Bureau. 2022. Older People Projected to Outnumber Children. https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html#:~:text=6%2C%202018%20%E2%80%94%20The%20year%202030,residents%20will%20be%20retirement%20age.
[10] M Faviero. 2022. Share of those 65 and older who are tech users has grown in the past decade. *Pew Research Center, January* 13 (2022).
[11] Peter Gregor, Alan F Newell, and Mary Zajicek. 2002. Designing for dynamic diversity: interfaces for older people. In *Proceedings of the fifth international ACM conference on Assistive technologies*. 151–156.
[12] Andrew Guess, Jonathan Nagler, and Joshua Tucker. 2019. Less than you think: Prevalence and predictors of fake news dissemination on Facebook. *Science advances* 5, 1 (2019), eaau4586.
[13] Maram Hasanain and Tamer Elsayed. 2022. Studying effectiveness of Web search for fact checking. *Journal of the Association for Information Science and Technology* 73, 5 (2022), 738–751.
[14] Naeemul Hassan, Gensheng Zhang, Fatma Arslan, Josue Caraballo, Damian Jimenez, Siddhant Gawsane, Shohedul Hasan, Minumol Joseph, Aaditya Kulkarni, Anil Kumar Nayak, et al. 2017. ClaimBuster: the first-ever end-to-end fact-checking system. *Proceedings of the VLDB Endowment* 10, 12 (2017), 1945–1948.
[15] Duke's Reporter Lab. 2022. FACT-CHECKING NEWS. https://reporterslab.org/fact-checking/
[16] Michael L Miller and Cristian Vaccari. 2020. Digital threats to democracy: comparative lessons and possible remedies. *The International Journal of Press/Politics* 25, 3 (2020), 333–356.

[17] Lynnette HX Ng and Araz Taeihagh. 2021. How does fake news spread? Understanding pathways of disinformation spread through APIs. *Policy & Internet* 13, 4 (2021), 560–585.
[18] Research Center Pew. 2021. Mobile Fact Sheet. Retrieved May, 2022 from https://www.pewresearch.org/internet/fact-sheet/mobile/.
[19] Giselle Rampersad and Turki Althiyabi. 2020. Fake news: Acceptance by demographics and culture on social media. *Journal of Information Technology & Politics* 17, 1 (2020), 1–11.
[20] Yasmim Mendes Rocha, Gabriel Acácio de Moura, Gabriel Alves Desidério, Carlos Henrique de Oliveira, Francisco Dantas Lourenço, and Larissa Deadame de Figueiredo Nicolete. 2021. The impact of fake news on social media and its influence on health during the COVID-19 pandemic: A systematic review. *Journal of Public Health* (2021), 1–10.
[21] Nelson A Roque and Walter R Boot. 2018. A new tool for assessing mobile device proficiency in older adults: the mobile device proficiency questionnaire. *Journal of Applied Gerontology* 37, 2 (2018), 131–156.
[22] Victoria L Rubin. 2010. On deception and deception detection: Content analysis of computer-mediated stated beliefs. *Proceedings of the American Society for Information Science and Technology* 47, 1 (2010), 1–10.
[23] Hyunjin Seo, Matthew Blomberg, Darcey Altschwager, and Hong Tien Vu. 2020. Vulnerable populations and misinformation: A mixed-methods approach to underserved older adults' online information assessment. *New Media & Society* (2020), 1461444820925041.
[24] Edson C Tandoc Jr, Zheng Wei Lim, and Richard Ling. 2018. Defining "fake news" A typology of scholarly definitions. *Digital journalism* 6, 2 (2018), 137–153.
[25] Galen Weld, Maria Glenski, and Tim Althoff. 2021. Political Bias and Factualness in News Sharing across more than 100,000 Online Communities. In *Proceedings of the International AAAI Conference on Web and Social Media*, Vol. 15. 796–807.
[26] Ja Eun Yu and Debaleena Chattopadhyay. 2020. "Maps are hard for me": How Older Adults Struggle with Mobile Maps. In *The 22nd International ACM SIGACCESS Conference on Computers and Accessibility*. in press.
[27] Xinyi Zhou and Reza Zafarani. 2020. A survey of fake news: Fundamental theories, detection methods, and opportunities. *ACM Computing Surveys (CSUR)* 53, 5 (2020), 1–40.

A PRISMA FOR SYSTEMATIC APP REVIEW

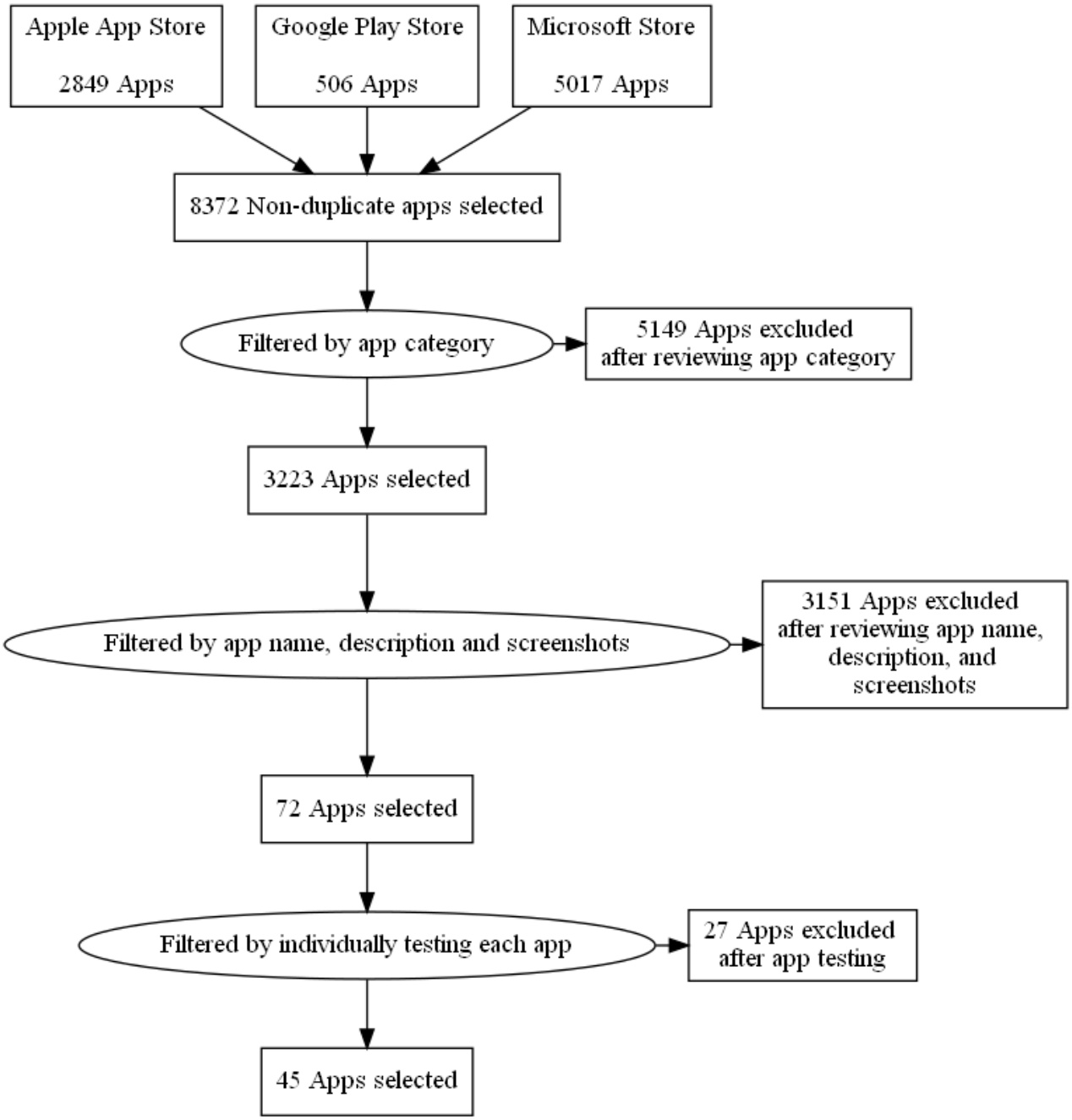

Figure 3: PRISMA graph for the systematic app review. Categories that were excluded are art and design, beauty, dating, finance, food and drink, game, health and fitness, house and home, music and audio, shopping, travel and local, developer tools, graphic and design, photo and video, stickers, security, personalization, kids and family, medical, multimedia design, and navigation and maps.

B LIST OF FACT-CHECKING APPS

OS	App Name	App Language
Apple	#FakeHunter	Polish
	Alt_News	English and Hindi
	Candider	English
	ezNews	English
	Fact-checking	Italian
	FactStream	English
	Fake News Check	German
	Herald AI	English
	Juhina	English and Arabic
	Logically	English
	Media Glass	English
	News OS	English
	News Real	English
	NewsGuard - News Trust Ratings	English
	Newstrition	English
	OIgetIt Fake News Filter	English
	Overlooked	English
	Real411	English
	RightStrike	English
	Sebenarnya.my	Malay
	Stop Fals	Romanian
	T-check Haiti	French
	Voz Das Comunidades	Portuguese
	Watchdog Sri Lanka	English and local Sri Lankan languages
	Watchlist AT	German (Austria)
	Winno - Just the facts	English
	Yabby Fake News Check	English
Android	Alt News	English and Hindi
	Clickbait Title Detector	English
	Fact Check: verify info at your fingertips	English
	Fact checker - verify news - Latest news	English
	Factcheck Lebanon	Arabic
	Fake News	English
	Fake News Check	German
	Fake News Detector	English
	Fake News Search Engine - Fight Fake News - Nokiye	English
	Hoaxy - Expose Fake News	English
	Logically	English
	Maldita.es - Periodismo para que no te la cuelen	Spanish
	NewsCop | Fake News Detector	English
	Newsvoice - Unbiased & Real News Feed, USA & World	English
	OIgetIt Fake News Filter	English
	opIndia	English and Hindi
	Politico	English
	YOUTURN - Tamil's first Fact checking Organization	English and Tamil

Table 2: 27 fact-checking apps available for iOS devices and 18 fact-checking apps available for Android devices were reviewed.